Pinellia koreana (Araceae), a New Species from Korea

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ABSTRACT. A new species in Araceae, *Pinellia koreana*, is described from South Korea. *Pinellia koreana* differs from *P. yaoluopingensis*, *P. pedatisecta*, and *P. ternata* by having 3-foliolate leaves with bilobed lateral leaflets when mature and only petioles bearing bulbils. A polyploid chromosome number is reported for the new species ($2n = 104$), representing an octoploid series from a base number $x = 13$.

Key words: Araceae, chromosome number, Korea, *Pinellia*.

The genus *Pinellia* Tenore (Araceae) consists of about 10 species restricted to warm temperate and temperate East Asia (Mayo et al., 1997). All species are small plants, and some are popular as horticultural subjects. In Korea and China *Pinellia* is used for herbal medicine, particularly for chest complaints.

Taxonomic studies on the genus have concentrated on morphology (Li et al., 1977; Wu & Li, 1979; Li et al., 1997a) and cytological studies (Kurakubo, 1940; Ito, 1942; Suzuka, 1953; Jones, 1957; Marchant, 1972; Li et al., 1997b).

Pinellia in Korea was reported by Nakai (1911), Chung et al. (1937), and Chung (1956) as consisting of a single species, *Pinellia ternata* (Thunberg) Breitenbach. Yang (1958) reported that the genus *Pinellia* in Korea consisted of two taxa, *Pinellia ternata* and *Pinellia ternata* var. *viridis* Makino, but *P. ternata* var. *viridis* was a synonym of *P. ternata*. Toh (1978) undertook a taxonomic study to investigate differences of morphological features, anatomical structures, and histochemical and cytological characteristics between *P. ternata* and *P. tripartita* Schott, the latter not recorded from Korea.

While studying the genus in Korea, we found a population of *Pinellia* that does not belong to any taxon hitherto described. The plants grow along the Hwa-um valley of the southern slope of Mt. Chiri. The population of *P. koreana* in the type locality occupies a small area of ca. 100 m^2 and consists of about 25 individuals. We herein describe and illustrate this new species of *Pinellia* from Korea.

Pinellia koreana K. H. Tae & J.-H. Kim, sp. nov.

TYPE: Korea. Jeollanam-do Province, Mt. Chiri, grassy slopes in Hwa-um valley, 480 m, 10 June 1999, *K. H. Tae 99-001* (holotype, TUT).

Korean name: Ji-Ri-Ban-Ha.

Herba perennis usque ad 40 cm alta; tuber globosum 1.0–2.0 cm diametro. Folia 2, ovata, 3-foliolata, iterum scissa in extrinsecus 2-foliolata, 10–12 cm longa, 7–11 cm lata; petiolis 13–20 cm longis. Pedunculi 23–30 cm longi; spatha erecta. Numerus chromosomatum $2n = 104$ ($8x$).

Perennial herb, to 40 cm tall. Tuber globose, 1.0–2.0 cm diam. Leaves 2. Petiole greenish, 13–20 cm long, base sheathing. Bulbils present in sheath at lower part of petiole, 7–8 mm diam. Blade ovate in outline, green, trifoliolate, lateral leaflets bilobed when mature, green, 10–12 cm long, 7–11 cm wide. Peduncle green, solitary, longer than the petiole, 23–30 cm. Spathe green outside, typically light purplish green within, tube narrowly cylindric, 6–7 cm long. Spadix with pistillate portion basal, 1.5–1.8 cm long, staminate portion above, 0.9–1.2 cm long, and appendix violet to green (Fig. 1). Berries ovoid, greenish white, stigma persistent. Somatic chromosome number $2n = 104$.

Flowering May–June.

The new species (Fig. 1) appears to be closely related to *Pinellia ternata*. The characteristic features and differences among related species are summarized in Table 1. The new species differs from the three other species in the leaf shape and the position of the bulbils. Somatic chromosome numbers of *Pinellia koreana* were established as $2n = 104$. This represents the first cytological report for the new species, which is seen as octoploid, from an $x = 13$ series. The plants examined cytologically were collected from the type population on Mt. Chiri on 10 June 1999 (*K. H. Tae 99-001*, TUT).

Pinellia koreana is distinguished from *P. yaoluopingensis* X. H. Guo & X. L. Liu, *P. pedatisecta* Schott, and *P. ternata* in having trifoliolate leaves with bilobed lateral leaflets when mature, only petioles bearing bulbils (Fig. 1), and somatic chromosome numbers ($2n = 104$, Table 1, Fig. 2). Re-

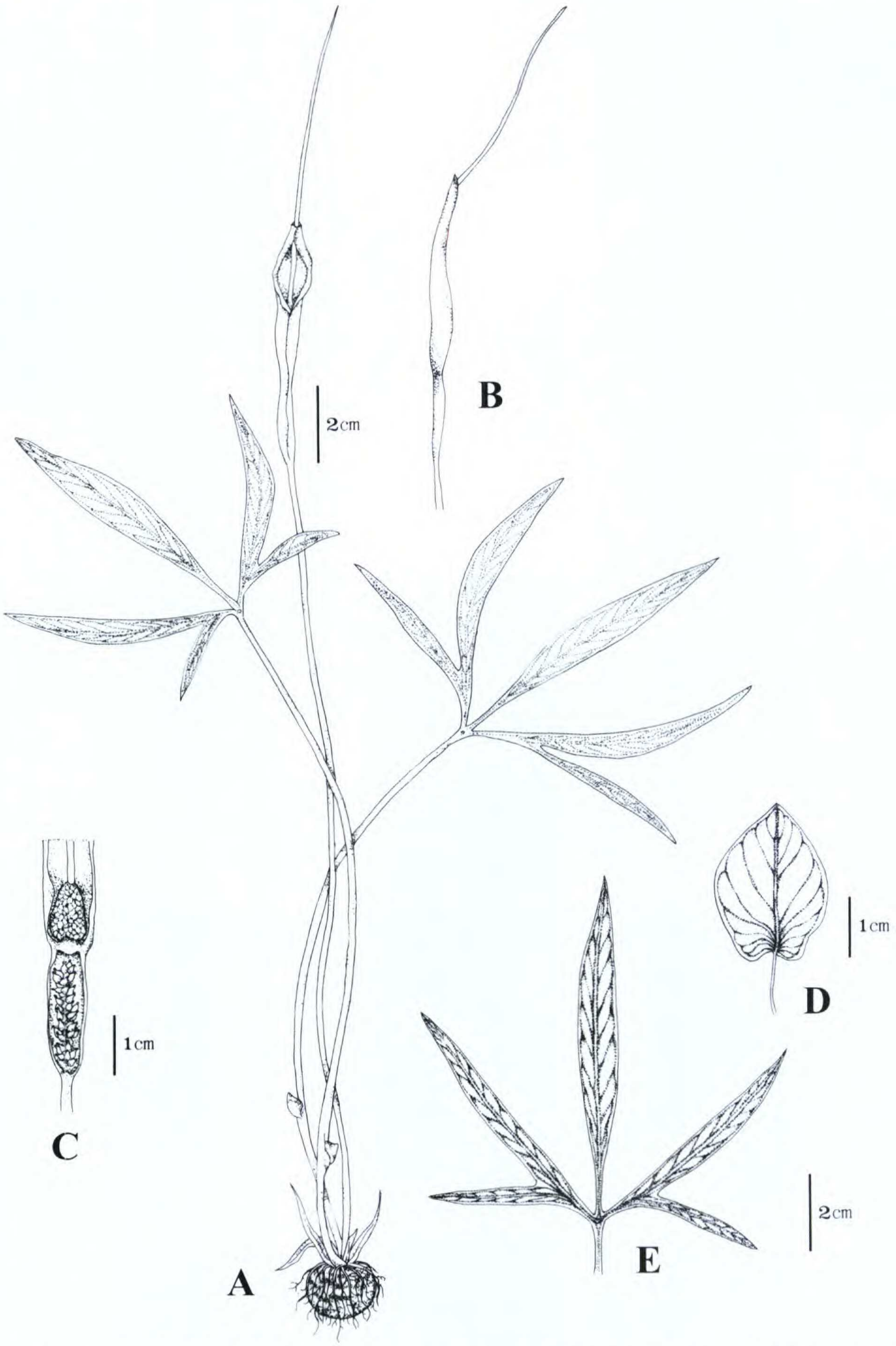

Figure 1. *Pinellia koreana* K. H. Tae & J.-H. Kim. —A. Habit. —B. Spathe and spadix. —C. Monoecious flowers, showing staminate flowers on the upper portion, and pistillate flowers on the lower portion of the spadix. —D. Young leaf. —E. Mature leaf. Drawn from the holotype, *Tae 99–001* (TUT).

Table 1. Diagnostic morphological and cytological characters of the new species and closely related taxa. The chromosome numbers of *P. yaoluopingensis*, *P. pedatisecta*, and *P. ternata* are based on Kurakubo (1940); Ito (1942); Malvesin-Fabre (1945); Huttleston (1953); Suzuka (1953); Jones (1957); Marchant (1972); Guo and Liu (1986); and Li et al. (1997b).

Characters	*P. yaoluopingensis*	*P. pedatisecta*	*P. ternata*	*P. koreana*
Distribution	China	China	China, Korea, Japan	Korea
Leaflet number (blade)	3(to 5)	6 to 11	3	3 (5-parted)
Petiole	deep green with purple spots	green	green	green
Bulbils	present only in tuber-top	absent	present in petiole and leaf	present only in petiole
Spadix	green	yellow	green	green
Flowering period	May–July	June–July	May–July	May–June
Somatic chromosome # (basic #)	$2n = 26$ ($x = 13$)	$2n = 26$ ($x = 13$)	$2n = 28, 54, 72, 99, 108, 116, 128$ ($x = 7, 8, 9, 29$)	$2n = 104$ ($x = 13$)

cently, Li et al. (1997) discussed the taxonomic relationship among *Pinellia* species in China based on bulbil patterns and chromosome numbers. They suggested that the basic chromosomes $x = 7, 8, 9$ were derived from $x = 13$. Therefore, *P. koreana* may be interpreted as one of the primitive chromosomal type $x = 13$, from an octoploid series to $2n = 104$.

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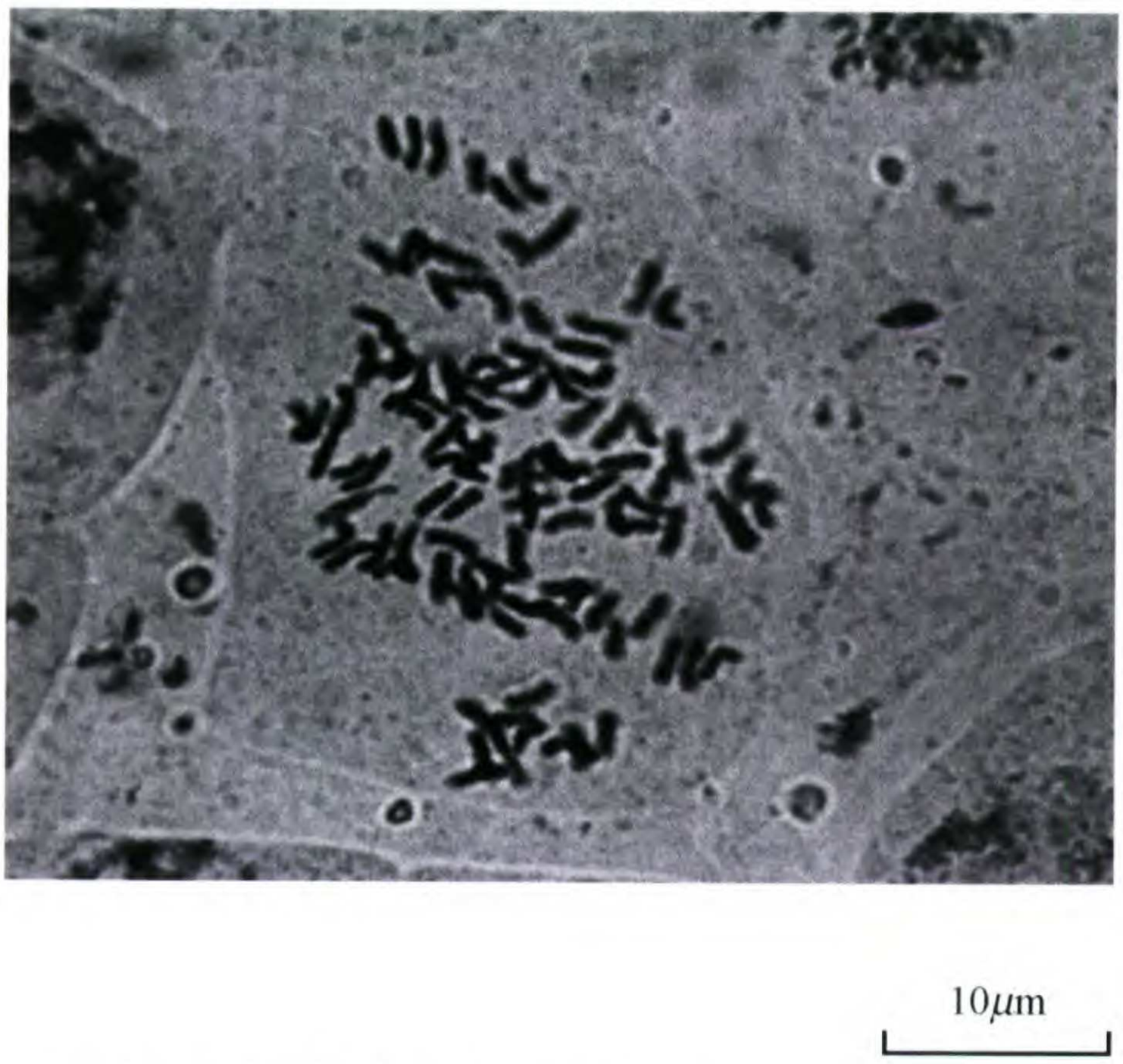

Figure 2. A chromosome photograph of *Pinellia koreana* ($2n = 104$).

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